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1. Of all major railroads in China the Shanghai-Nanking Railroad was considered to be the best in 1948. At that time the condition of repair, facilities, and equipment, although below standard compared to US railroads, was also considered to be best.

2. The main line was single tracked with branch loop lines at each station. The length of the railroad was 180 miles. The gauge was standard, 4'8½". As of 1948 the railroad line had not undergone any gauge changes. The ballast was crushed stone and crushed slag (2' thick). Treated wood ties were 8" x 8" x 8'. The ties were obtained from China, Canada, and the US. The rails were international standard weight, 90# and were obtained from China, England, Germany, and the US.

3. The movement of trains were controlled by signals and other communication facilities. Both colored lights and disc flags were used. They were located at stations and at intervals between. Normal telegraph and telephone communications were also available. There was a bypass located between every two stations. A train could not pass through a station without a pass or permission from the previous station.

4. The only tunnel was located at Chung-Kang (23°08'N, 113°51'E). The tunnel was straight and was double tracked. There were several difficult curves in the Danyang area. Ferries across the Yangtze River had electrical loading facilities. The ferries could handle approximately 80 cars each. The Ching-Yang-Kong bridge was located 20 miles out of Shanghai.

5. Coal facilities were fair, available stock piles contained approximately 10,000 tons. Locomotive coal stock piles and their estimated size were as follows:

Nanking	3,000 tons.
Woosai	2,000 tons.
Shanghai	5,000 tons.

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It took 45 minutes to replenish a locomotive tender's coal and water supply. The coal piles were replenished daily. Water facilities were good, chemical treatment was used to soften the water which was obtained from the Yangtze and Huangpoo Rivers.

6. Locations of passenger, freight cars, and locomotive repair facilities, round houses, etc. were as follows: locomotive repair factory in Changchow, locomotive storage sheds, light repairs and round house in Nanking, Changchow, and Shanghai, passenger and freight car repair shops and storage sheds in Nanking and Shanghai. The Changchow factory also manufactured locomotives, passenger cars, freight cars, and machine tools. It employed approximately 3,000 persons and had its own foundry and machine shop.

7. Turntables, snow sheds, slide fences, and other facilities were also available. The only portion of the road susceptible to flood or landslide was that portion above the Yangtze River. Otherwise, climatic conditions did not affect the road much. There were seven large stations and many smaller ones between Shanghai and Nanking. All railroad installations were guarded by the regular railroad policemen.

8. Railroad operating problems were caused by shortages of locomotive spare parts, lubricating oil, rails, ties, and other miscellaneous items. Factors which contributed to the majority of the locomotive and rolling stock breakdowns were wheel flanges out of gauge, brakeshoes worn out, and defective air hose. Greatest shortages existed in brakeshoes. When materials were available the Shanghai-Nanking Railroad was maintained easily because the line was on a relatively flat plain. At no point was it necessary for two or more locomotives to pull a train. The only steep grades, 3 to 5%, were in the Lungtung area.

9. In the factories or repair sheds, instructions and other orders were issued by the engineer or master mechanic. On the road, orders were issued by the conductor. In the station the crew obeyed the orders of the station master. Although a speed limit of 90 kilometers per hour was set on the main line, 35 to 40 miles per hour was the fastest ever obtained. On bridges and curves, lower speeds were imposed.

10. As of 1948 the Shanghai-Nanking Railroad had no diesel or electric locomotives. The railroad used three types of steam locomotives. The most popular was the Pacific type used on all passenger trains. The Mikado type was used on freight trains and the Consolidated type for yard shuting. Up to 1948 China imported ten locomotives annually from the US.

11. Assignment of locomotives and train crews was the responsibility of the foreman who prepared a time schedule for each run two or three days in advance. Locomotives of one particular district were not allowed to operate on lines of another district. The average time lost due to terminal delay depended on the condition of the locomotives in the repair sheds. The average time lost for passenger trains was 15 to 30 minutes and for freight trains was 30 to 45 minutes. Locomotives had small or light repairs made after runs of 13,000 kilometers, medium repairs after a six-month period, and major repairs after three years of operation. Boiler cleaning took place weekly and there were inspections made at the end of each run. It took approximately four hours between the arrival of a locomotive at the end of its run and the departure for the return run.

12. The average run of passenger trains was eight trains daily and the maximum was ten trains daily. For freight trains the daily average was four trains and the maximum was five. Passenger train operations could be considered efficient because they arrived and left the stations approximately on time. Winter and other seasonal factors did not have too much affect on the operations of trains or in average tonnage per car. The seasonal factor having the most affect on traffic was the fall grain movement. During that time the track was very busy and most of the breakdowns occurred then. In 1947 and 1948 there were no restrictions on passenger travel.

13. The line had three types of freight cars, 15, 25, and 40 tons (net tonnage). The maximum speed permitted for freight cars was approximately 40 kilometers per hour. The reason was bad rolling stock and track condition (despite the fact that this road was in the best condition in China). Most of the freight cars were old and were manufactured in Europe. Some of the newer freight cars were manufactured in Dairen and Tsingtau. Prior to 1948 several hundred freight cars were imported from Iran. Because most of the freight cars were transferred to other lines during the Chinese Civil War, the Shanghai-Nanking Railroad suffered a shortage of good freight cars. Those which were reclaimed were in very bad condition because in 1948 the equipment of other lines was worse than that of the Shanghai-Nanking line.

14. Twelve hours was normally required from the time a freight car arrived at a station to the time it left. Two or three hours was required for loading or unloading, 1/2 hour for inspection, one hour for switching and classification, and the rest for waiting. If the car was classified in the yard but not loaded or unloaded there, the average time between the entry of a car into the yard and its exit was one hour. Most freight cars were loaded to their volumetric capacity. Loaded freight cars were always sealed and locked. The papers which were attached to the outside of a freight car indicated the origin, designation, routing, and contents except in the case of military items when the contents were not indicated. No time limits were invoked for either loading or unloading as this was done by workers not employed by the railroad. The charges were figured according to the size of the car. In 1948 there were no hourly rates in existence in China. Most of the loading and unloading was done by manpower. The chief problem of this method was the time required. Depending upon the number of workers employed it sometimes took a full day to unload a single car.

15. When using the maximum sized freight car (40 tons) the average freight train consisted of 30 cars. On the Shanghai-Nanking Railroad freight shipments always followed the same route, as its short length did not require rerouting.

16. As of 1948 the rolling stock of the Shanghai-Nanking Railroad consisted of 100 locomotives, 2,000 freight cars, and 100 passenger cars. The Nanking shed housed 40 locomotives, the Shanghai shed housed 40 and the Changchow housed 20. Passengor and freight cars had a thorough inspection made every year. Inspections of axle boxes and wheel flanges were held at the end of each run. A major repair on a locomotive took from two to four weeks while a medium repair took from one to two weeks. Passenger and freight car repairs took from one to three days.

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18. The greatest tonnage ratings(the same in either direction) on the Shanghai-Nanking line was approximately 1200 tons. This was for the Mikado type locomotives pulling a train under normal conditions.

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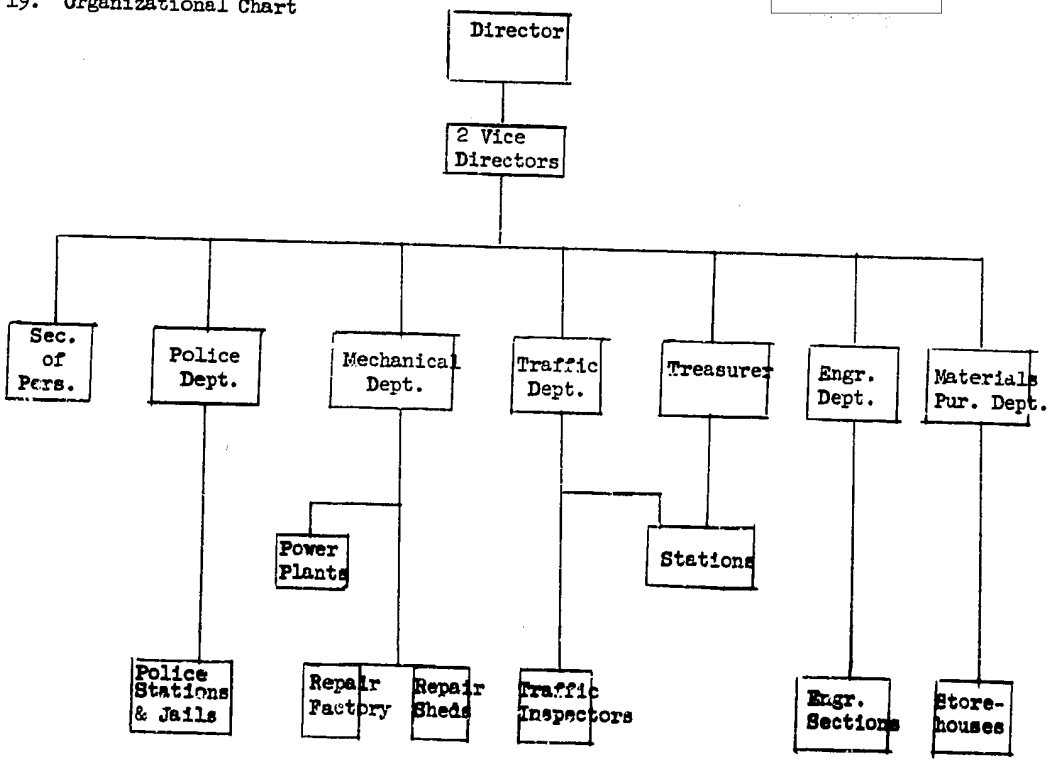
19. Organizational Chart



20. The Police Department was in charge of all the uniformed forces that guarded the line property. The Mechanical Department was in charge of the power plants, the repair factory, and the repair sheds. It repaired and maintained locomotives, passenger and freight cars, and road signals. The Traffic Department handled all of the passenger and freight business. It also maintained traffic inspection and station upkeep. The Treasury administered wages of all of the employees and incomes of the road. The Engineering Department supervised the maintenance of tracks, bridges, and buildings. Materials Purchasing Department was in charge of purchasing and storage of parts and other materials.

21. In 1948 the director of the road was a Mr. P. C. Chen. He had been the under-secretary of the Communications Ministry of the Chinese Central Government. He graduated from Harvard University.

22. In 1948 the Shanghai-Nanking Railroad had approximately 25,000 employees. The breakdown was:

Personnel	500
Police Department	1500
Mechanical Department	7000
Traffic Department	8000
Treasury	1000
Engineering Department	6000
Materials Purchasing Dept.	1,000

These figures included many employees of other lines because their lines had been damaged or destroyed during World War II.

23. The general level of efficiency was quite good, especially among the train crews, the repair personnel, and technicians. Eighty per cent of the train crews and repair personnel had been trained by the Japanese. A few of the technicians also had been educated in Japan, the UK, and the US. Absenteeism was at a minimum. Generally speaking the morale of the personnel was good.

24. To change the type or location of his job the worker simply submitted his request to his immediate boss for approval. Occasionally, final approval had to be obtained from the department heads or from the director of the railroad. The Shanghai-Nanking Railroad did not have many job changes annually because it was in the best operating condition and employment was steady.

25. Accidents by employees did not occur frequently. Isolated cases of train collisions sometimes resulted in loss of limb or life. Most of the minor train accidents were caused by bad sections of track, wheel flanges out of gauge, and occasionally by improper operation of signals and switches. Some of the larger or more serious accidents were caused by communist sabotage.

26. Operation plans and goals set by the local units of the Shanghai-Nanking Railroad were usually fulfilled because of rewards paid to employees. In 1948 there were champions or those who exceeded their production standards and quotas in the Traffic, Mechanical, and Engineering Departments. There were also coal and oil economy champions among the train crew, accident elimination champions among the repair personnel, ticket and inspection champions among the traffic inspectors, and a conductor's champion who increased business the greatest.

27. Basic wages paid to employees as of 1948 were: car washer US $30 to 50 per month; firemen US $50 to 70 per month; drivers US $70 to 90 per month; inspectors US $90 to 120 per month; and road crew foremen US $120 to 180 per month. Others were: apprentices US $30 to 50 a month; machinists US $50 to 90 per month; mechanical shop superintendents US $90 to 120 per month; mechanical shop foremen US $120 to 180 per month; and master mechanics and engineers US $200 to 360 per month.

28. For train crews, the average working period was eight hours per day and six days per week. The maximum working period per day was twelve hours.

29. Statistical publications issued by the railroad were the Nanking-Shanghai Weekly published by the secretary of the Personnel Department and the Traffic Weekly Report published by the secretary of the Traffic Department.

30. The National Chiao-Tung University, also known as the Communications University, was the largest school in China to annually graduate students trained in railroad operations. Its curricula, equipment, and standards were comparable to US universities.

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